



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/355,987 11/18/99 BARRESI

J 6224/JCK

EXAMINER

IM22/0911

MILES & STOCKBRIDGE P.C.  
1751 PINNACLE DRIVE, SUITE 500  
MCLEAN VA 22102-3833

COMBS, J

ART UNIT

PAPER NUMBER

1742

DATE MAILED:

09/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/355,987

Applicant(s)

BARRESI ET AL.

Examiner

Janelle Combs-Morillo

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on June 28, 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5 and 7-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5 and 7-20 is/are rejected.
- 7) ☒ Claim(s) 16,17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 16 and 17 objected to because of the following informalities: claims 16 and 17 are dependent on canceled claim 6. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5, 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the ASM Handbook: Vol. 2 Properties and Selection: Nonferrous Alloys and Special-Purpose Materials.

The ASM Handbook: Vol. 2 Properties and Selection: Nonferrous Alloys and Special-Purpose Materials teaches that cast aluminum alloy 356.0 has a composition comprising: 0.20-0.45% Mg, 6.5-7.5% Si, and 0.6% max. Fe (page 164), which overlaps the composition as presently claimed in claims 1, 4, 5, and 15. The ASM Handbook: Vol. 2 teaches that “the cells contained within the dendrite structure correspond to the dimensions separating the arms of primary dendrites” (page 133, column 2, lines 26-29), and that castings of Al-Si alloy A356 have high strength and high elongation when the dendritic cell size ranges from ~20-40  $\mu\text{m}$  (Fig. 3 page 134). Said Al-Si casting alloy is typically solution heat treated at 535-540°C for 8-12 hours,

Art Unit: 1742

quenched in hot water (~ 65-100°C), and aged at 150-230°C for 2-9 hours (Table 36, page 168), which are substantially the same process steps as presently claimed in claims 12, 13, 14, 19, 20.

The ASM Handbook: Vol. 2 Properties and Selection: Nonferrous Alloys and Special-Purpose Materials teaches that cast aluminum alloy 357.0 has a composition comprising: 0.45-0.6% Mg, 6.5-7.5% Si, and 0.15% max. Fe (page 166), which overlaps (or touches the boundary) of the composition as presently claimed in claims 1, 4, 5, and 15. Said alloy is typically solution heat treated at 540°C for 8 hours, hot water quenched, followed by aging ~ 170°C for 3-5 hours (page 166), which are substantially the same process steps as presently claimed in claims 12, 13, 14, 19, 20.

The prior art does not teach what phases are present in the final (and intermediate) aluminum alloy processed as stated above. However, the present specification states that “solution treatment at 540°C for 2 or more hours produced desired levels of transformation of  $\pi$  to  $\beta$  phase” (page 8 lines 13-15), which is substantially the same as the solution heat treatment steps of the prior art. The examiner asserts that because the prior art discloses substantially the same aluminum alloy processed in substantially the same steps, substantially the same product would result as presently claimed. It is held the ASM Handbook: Vol. 2 Properties and Selection: Nonferrous Alloys and Special-Purpose Materials has created a prima facie case of obviousness of the presently claimed invention.

4. Claims 1-3, 5, 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JA 53-16312 in view of the ASM Handbook: Vol. 2 Properties and Selection: Nonferrous Alloys and Special-Purpose Materials.

Art Unit: 1742

JA 53-16312 teaches an aluminum alloy comprising 6-8% Si, 0.2-0.4% Mg, and 0.001-0.15% Fe, which overlaps (or touches the boundary) of the composition as presently claimed in claims 1, 4, 5, and 15. Said alloy is processed through the steps comprising: casting, solution heat treating 545-555°C for about 9 hours, quenching in 70°C hot water, and aging at ~130°C for 4 hours (see abstract), which are substantially the same process steps as presently claimed in claims 12, 13, 14, 19, 20.

The prior art of JA 53-16312 does not teach the solidification rate of the casting or what phases are present as the result of the above mentioned process steps. However, the ASM Handbook: Vol. 2 Properties and Selection: Nonferrous Alloys and Special-Purpose Materials, as stated above, teaches the solidification of castings at rapid rates in order to produce high quality castings with small DAS 20-40 $\mu$  (p 133-134). The prior art does not teach what phases are present in the final (and intermediate) aluminum alloy processed as stated above. However, the present specification states that "solution treatment at 540°C for 2 or more hours produced desired levels of transformation of  $\pi$  to  $\beta$  phase" (page 8 lines 13-15), which is substantially the same as the solution heat treatment steps of the prior art.

Therefore, it would have been obvious to one of ordinary skill in the art to solidify said aluminum casting (as taught by JA 53-16312) at rapid solidification rates in order to produce a high quality casting as taught by ASM Handbook: Vol. 2, because ASM Handbook: Vol. 2 teaches that improved strength and elongation are achieved with small DAS ranging ~ 20-40 $\mu$  (see page 134, Fig. 3).

*Response to Arguments*


5. In the response filed June 28, 2001 the applicant canceled claims 4 and 6, and amended claims 1 and 5. No new matter has been added by the present amendment. The argument that the prior art does not teach the presently claimed DAS has not been found persuasive. As stated above, it is known in the art of solidifying Al-Si hypoeutectic alloys that small DAS, such as 20-40  $\mu\text{m}$ , exhibit high strength and good ductility (toughness). Furthermore, the examiner points out that because the prior art teaches substantially the same process as presently claimed, then substantially the same results (such as phase composition) are expected to occur.

*Conclusion*


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs- Morillo whose telephone number is (703) 308-4757. The examiner can normally be reached Monday through Friday from 7:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (703) 308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-7719.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

jcm 

September 10, 2001

  
GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER